Heather,

This message summarizes EPA's comments on the revised draft Environmental Monitoring Plan (EMP) study plan submitted by Shell on August 22, 2013, for six lease blocks located within the Burger prospect of the Chukchi Sea.

1. Phase I. Overall, Shell's revised EMP has addressed EPA's comments regarding the Phase I justification (see EPA comments, dated August 8, 2013). However, one remaining question is how the data from Phase I will be used to evaluate the potential effects from drilling discharges based on data collected during Phases III and IV. Evaluating the potential impacts of the authorized discharges on water, sediment, and biological quality are one of the major goals and objectives of the EMP. In order to have clarity, the EMP must include a detailed discussion of how Shell intends to carry out the data analysis of comparing Phase I data to Phases III-IV.

   Please provide a complete description, either in the EMP or in the QAPP, of the data that will be used in the hypothesis testing of pre- versus post-drilling conditions. As with the Phase III and Phase IV data, the Phase I data will need to be explained in terms of:
   - data quantity needed (statistical power);
   - type of statistical analysis (similar to test done on the benthic comparisons);
   - quality assurance process to support that Phase I data was indeed collected in a rigorous manner;
   - exact location(s) of the samples relative to the action area; and
   - level of variability of data used for the pre/post analysis (subset of the larger body of existing data needs to be pre-defined to ensure an unbiased process after Phases III and IV data are collected)

1. Metals Analysis. During the August 29, 2013 meeting we discussed the availability of EPA Saltwater Chronic Criteria for use as screening effect levels in Shell's EMP for the metals listed in Table A of the GP. At that time EPA agreed to provide threshold values for those metals without criteria. However, we are unable to obtain assistance from EPA staff under such short notice and quick turn-around time. Therefore, we request that Shell obtain the necessary values to complete Table 1.

   We recommend that Shell look beyond EPA criteria to other sources of conservative marine sediment benchmarks. Example sources of information include NOAA's Screening Quick Reference Tables and in a Compendium of Environmental Quality Benchmarks by MacDonald et al.1999.

   EPA also recommends that Shell consider contracting directly with Don MacDonald. Don has worked with EPA in the past, and is respected within the Agency. He maintains a significant database of sediment toxicity literature and

will conduct specific searches and select appropriate values to meet data quality objectives. Don can be contacted through his firm:

MacDonald Environmental Sciences LTD.
24-4800 Island Highway N
Nanaimo, BC V9T 1W6
(250) 729-9625 (Phone)
(250) 729-9628 (Fax)

2. Discharge Model. EPA requests additional modeling assessments with respect to non-contact cooling water temperature (Permit Part II.A.13.e.2.ii.). Information was not provided on the dilution of the wastestream with increased distance from the point of discharge.

   Although the assessment of Discharge 001 deposition characteristics met the requirement of the GP, it did not provide sufficient information on ambient receiving water characteristics, specifically, the range of conditions for current speed/direction, vertical salinity and temperature profiles. Descriptions of all the available data needs to be provided, and the modeling assessment needs to clearly address the range of observed conditions. Additionally, the modeling report did not provide a clear correlation between the deposition modeling assessment and plans for post-drilling monitoring (i.e. Permit Part II.A.13.h.1.).

3. Marine Mammal Deflection Monitoring. The EMP study plan provided an adequate description of how marine mammal deflection observations would occur and how these observations would be correlated with periods of discharge.

4. Sediment Characterization. The EMP study plan was expanded to include 5 random sample sites, as well as specific sites 100m from the well. Attempts will be made to capture data closer to the well (within 50m), although additional explanation was provided regarding the logistical constraints associated with sampling at sites within 50m of the well location. Furthermore, the EMP study plan provided a much clearer justification for the proposed spacing and radial distribution of sample sites.

5. Benthic Community Bioaccumulation Study. The EMP study plan provided a much clearer presentation of the proposed approach that will be used to meet the objectives of the Chukchi GP at Part II.A.13.j.3. The EMP study plan clarified the targeted number of samples and desired species (infaunal and epibenthic) to be analyzed under this monitoring requirement. The Appendix A Phase I Justification provide a clearer explanation of the available data that can be used for Phase I. The data seemed adequate and to have been collected within a reasonable proximity to the actual drill site. There was also a sufficient presentation identifying the similarities among sites and across the broader study area.

EPA looks forward to receiving the NOI package that is anticipated to be submitted later

this fall.

Sincerely,
Erin